

Status, Impacts and Operations of High-Salinity Wet Cooling Towers

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ABSTRACT

An alternative to the use of fresh water for cooling tower make-up is the use of high salinity water. While high salinity towers are not very common in the US, there are some examples of their use, including the installation of helper towers to address thermal discharge limits. The sources may range from the ocean, to estuaries to saline groundwater. Potential issues associated with the choice of saline make-up include effects on tower thermal performance and on the choice of materials of construction, both of which may affect the cost of the tower. In addition, operating and maintenance problems may arise as well as potentially exacerbated environmental problems particularly from the salinity of the drift. As the contractor for a CEC-PIER funded study, EPRI is conducting a survey to gather information. This paper will discuss the data gathered to and environmental impacts encountered in the use of salt water cooling towers for power plant cooling.

This paper will review the data collected to date on high-salinity towers, including information available on the proposed hybrid system for the Brayton Point Station in Somerset, Massachusetts.

For the purposes of this study, EPRI has assembled a list of high-salinity cooling towers in the US and in foreign countries, where information for foreign installations is readily available. The data gathered included:

- Location – power plant name, utility, state (or country) & city, year commissioned
- Type of cooling tower – mechanical or natural draft, cross flow or counter flow
- Cooling design parameters – cooling load, wet bulb temperature, approach & range

There is very little Operation and Maintenance information readily available on the operation of these towers, and what information has been collected to date is sketchy and anecdotal. This information will be presented to characterize the scope of what could be expected.

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